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REMARKS

In the present Office Action, claims 1 to 14 were examined. Claims 1-14 are rejected, no claims are objected to, and no claims are allowed.

By this Amendment, claim 3 has been amended, claim 10 has been canceled, and no claims have been added. Accordingly, claims 1-9 and 11-14 are presented for further examination. No new matter has been added. By this Amendment, claims 1-9 and 11-14 are believed to be in condition for allowance.

Explanation of Above Amendments

The amendment to claim 3 is to merely correct an obvious typographical error.

Drawing Informalities

In the present Office Action, the Examiner objected to the drawings.

Specifically, the Examiner asked that each limitation specified in the claims must be shown in the drawings. The Examiner pointed to the claimed two space covers in claim 10 as one example. Note claim 10 has been cancelled.

The Examiner also asked that Figures 1, 3, 8-9 and 13 should be designed with a -- Prior Art-- legend because they show only elements. The proposed drawing corrections label all of these drawings as "Prior Art" except Fig. 8 which a portion is labeled "Prior Art".

Finally, the Examiner objected to the drawings because they do not include a reference number [i.e. array of probes 64] mentioned in the specification. The Examiner asked that this number be added to the appropriate Figures. Note proposed drawing corrections insert reference number 64 into Figures 2 and 3.

Proposed drawing corrections are attached hereto.

Rejections under 35 USC §102

The Examiner rejected claims 1 and 2 under 35 U.S.C. §102(b) as being anticipated by Glenn et al. (U.S. Patent No. 6,448,506).

In making this rejection the Examiner stated the following:

"Regarding claim 1, Glenn et al disclose (see Figs. 1a-1h) a method of fabricating a plurality of micro probes (10) comprising

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the steps of: defining the shapes of a plurality of probes (10) as one or more masks; applying a photoresist (40) to first (30a) and second (30b) opposing sides of a metal foil (30) [see col. 4, line 64-col. 5, line 10]; overlaying one each of said masks (10) on opposing first (30a) and second (30b) sides of said metal foil (30); exposing said photoresist (40) to light passed through each of said masks (10); developing said photoresist (40); removing a portion of said photoresist (40) to expose a portion [via hole 21] of said metal foil (30); and applying an etcher [not shown but see col. 5, lines 7-11] to the surface of said metal foil (30) to remove said expose portion to produce a plurality of probes.

Regarding claim 2, Glenn et al. disclose (see Figs. 1a-1h) additional step of chemically polishing and plating the plurality of probes after the application of the etcher to the surface of said metal foil (see col. 5, lines 7-11)."

Applicants respectfully traverse this rejection for the following reasons: Applicants respectfully believe that the Examiner has incorrectly cited this reference. Glenn et al. (U.S. Patent No. 6,448,506) is not directed to a method of making a plurality of micro-probes. Instead, it is directed to making semiconductor packages and circuit boards. Its relevancy is not seen.

The Examiner also rejected claims 9-11 under 35 U.S.C. §102(b) as being anticipated by Mizuta (U.S. Patent No. 6,144,212). In making this rejection, the Examiner stated the following:

"Regarding claim 9, Mizuta discloses (see Fig. 1) a probe test head comprising: a first die (upper guide plate 5) comprised of first and second opposing planar surfaces (not numbered but shown) said first die (5) further comprising a pattern of first die holes (5a) extending through said first die (5) in a direction perpendicular to both of said first and second planar surfaces; a second die (lower guide plate 6) comprised of third and forth opposing planar surfaces (not number but shown) said second die (6) further comprising a pattern of second die holes (6a) corresponding to said pattern of first die holes (5a) said second die holds (6a) [see Fig. 9] extending through said second die (6) in said direction wherein said third planar surface is arranged in planar contact with said second planar surface such that said second die holes (6a) are offset from said first die holes (5a) [see Fig. 1] in a substantially uniform direction; and a plurality of probes (4) one each of said probes extending through one of said first die holes (5a) and one of said second die holes (6a) said probes (4) having a surface finish commensurate with having been formed by etching.

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Regarding claim 10, Mizuta discloses two spacing covers (support members 10) one each of said spacing covers inset into said first (5) and second (6) die.

Regarding claim 11, Mizuta discloses each of said plurality of probes (4) is substantially uniform in shape when compared to each other one of said plurality of probes (4) [see Fig. 1]."

Applicants respectfully traverse this rejection for the following reasons:

While Mizuta et al. states that the tip of its probe needle can be etched using nitric acid (see col. 1, lines 50-55), it does not teach or in any way suggest that the probe be substantially overall etched to form a surface finish commensurate with having been formed by etching.

Rejections under 35 USC §103

The Examiner rejected claim 3 under 35 U.S.C. §103(a) as being obvious and unpatentable in view of Glenn et al. In making this rejection, the Examiner stated the following:

"Regarding claim 3, Glenn et al. disclose applying a photoresist (40) to first (30a) and second (30b) opposing sides of a metal foil (30) [see col. 4, line 64-col. 5, line 10] and overlaying one each of said masks (10) on opposing first (30a) and second (30b) sides of said metal foil (30) is composed of a copper alloy [see col. 4, lines 51-55]. However, Glenn et al do not disclose the metal foil is composed of a berrillium-copper alloy. It is well known to have metal foil composed of a berrillium-copper alloy where needed (see MPEP 2144.04 *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947)). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have the metal foil composed of a berrillium-copper alloy since the alloy, which relates to ornamentation that has no mechanical function, would provide support in a selective manner to each individual user fabricating a plurality of probes."

Applicant respectfully traverses this rejection for the following reasons:

The above comments relating to Glenn et al. are equally applicable here. Note Figures 1(a) to 1(h) of this reference show the cross-sectional side views for making a semiconductor package (see column 3, lines 35-41) and not a micro-probe. These articles of manufacture are completely dissimilar.

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The Examiner also rejected claims 4-8 under 35 U.S.C. §103(a) as being obvious and unpatentable of Glenn et al., taken in view of Mizuta. In making this rejection, the Examiner stated the following:

"Regarding claim 4, Glenn et al. disclose (see Figs. 1a-1h) a method of fabricating a plurality of micro probes (10) comprising the steps of: defining the shapes of a plurality of probes (10) as one or more masks. However, they do not disclose the micro probe as claimed. Mizuta disclose (see Fig. 1) a micro probe (4) comprising: a probe base (upper portion 4a) having a generally uniform thickness; a probe shaft (intermediate portion 4b) connected to said probe base (4a) said probe shaft (4b) of said generally uniform thickness and extending along a curved expanse within said plane [see Fig. 1]; a probe end (lower portion 4c) connected to said probe shaft (4b) said probe end (4c) of said generally uniform thickness and extending for a substantially straight distance within said plane said straight distance being approximately parallel to said straight length [see Fig. 1]; and a scallop running substantially around a periphery comprised of the edges of said probe base (4a), said probe shaft (4b), and said probe end (4c). Further, Mizuta teaches that the addition of probe is advantageous because the necessary needle pressure is obtained even if variation of height is larger to some extent. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Glenn et al by adding probe as taught by Mizuta in order to provide the necessary needle pressure regardless of height of the probe during testing.

Regarding claim 5-6, Glenn et al disclose (see Figs. 1a-1h) a method of fabricating a plurality of micro probes (10) comprising the steps of: defining the shapes of a plurality of probes (10) as one or more masks. Mizuta disclose (see Fig. 1) a micro probe (4) comprising: a probe base (upper portion 4a) having a generally uniform thickness; a probe shaft (intermediate portion 4b) connected to said probe base (4a) said probe shaft (4b) of said generally uniform thickness and a probe end (lower portion 4c). However, they do not disclose said uniform thickness is preferably between 2 mils - 5 mils. It is well known to make the uniform thickness of the probe to be between 2 mils-5 mils (see MPEP 2144.04 *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984)). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have the probe uniform thickness to be between 2 mils-5 mils since the size of the thickness would provide support in a selective manner to each individual user fabricating a probe.

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Regarding claim 6, Mizuta discloses said scallop further comprises a scallop base (top portion of lower portion 4c) and a scallop tip (bottom portion of lower portion 4c).

Regarding claim 7, Mizuta discloses said scallop base (top portion of lower portion 4c) and said scallop tip (bottom portion of lower portion 4c) are separated by a substantially uniformly distance [see Fig. 1].”

Applicants respectfully traverse this rejection for the following reasons:

Again, the above remarks relating to Glenn et al. are equally applicable here.

The Mizuta microprobe construction does not have a scallop running around its periphery. Mizuta's probe is formed by mechanical bending which is a prior art process to the present invention.

The Examiner also rejected claims 12-14 under 35 U.S.C. §103(a) as being obvious and unpatentable over Mizuta. In making this rejection, the Examiner stated the following:

“Regarding claims 12-14, Mizuta discloses (see Fig. 1) a probe test head comprising: a first die (upper guide plate 5) having a pattern of first die holes (5a) extending through said first die (5); a second die (lower guide plate 6) having a pattern of second die holes (6a) and a plurality of probes (4) one each of said probes extending through one of said first die holes (5a) and one of said second die holes (6a). However, he does not disclose the probes are within 0.002-0.0005 inches of every other probe as claimed. It is well known to make the probes are within .002-.0005 inches of every other probe (see MPEP 2144.04 *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984)). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have the probes within .002-.0005 inches of every other probe since the spaces of the probes would provide support in a selective manner to each individual user using the probe test head for testing a DUT.

The above Remarks concerning the novelty of claims 9 and 11 over Mizuta are equally applicable here. Since Mizuta uses bended metal micro-probes, they are not as narrow as micro-probes of the present invention can be made and, thus, a plurality of them cannot be made as close to each other. See page 8, lines 14-24 of the present specification.

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Accordingly, Applicant submits that none of the references, alone or in combination, anticipate or make obvious the invention as presently claimed and that the application is now in condition for allowance. Therefore, Applicant respectfully requests reconsideration and further examination of the application and the Examiner is respectfully requested to take such proper actions so that a patent will issue herefrom as soon as possible.

If the Examiner has any questions or believes that a discussion with Applicant's attorney would expedite prosecution, the Examiner is invited and encouraged to contact the undersigned at the telephone number below.

Please apply any credits or charge any deficiencies to our Deposit Account No. 23-1665.

Respectfully submitted,
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Reg. No. 27,096



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